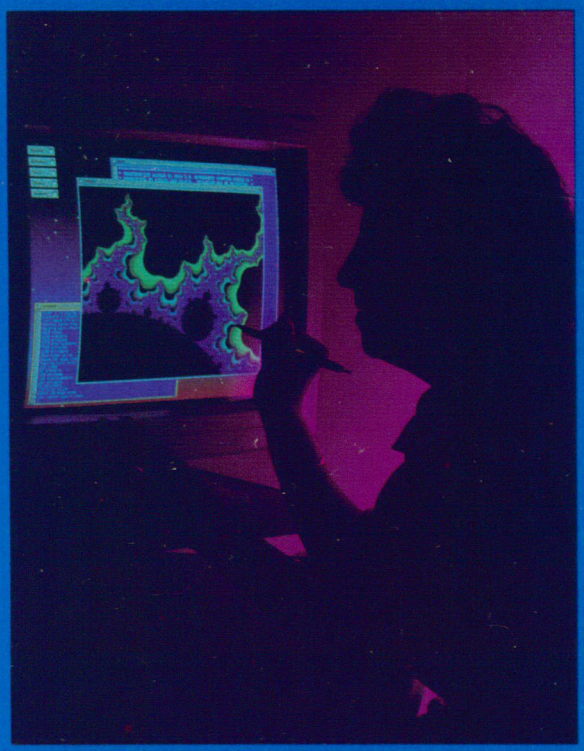


The Computing Systems And Networks Division

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
AUG 1991		**00-00-1991 to 00-00-1991**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
The Computing Systems and Networks Division	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Surface Warfare Center,Dahlgren,VA,22448-5000**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**18**	

The Computing Systems And Networks Division

Naval Surface Warfare Center
Dahlgren, VA 22448-5000

Foreword

I appreciate your interest in the Naval Surface Warfare Center in general and in the Computing Systems and Networks Division in particular. This brochure provides information regarding our mission which would help you to determine where you may best fit within the organization or how you could benefit from the services we offer.

NAVSWC is among the largest of the Navy's research and development Centers and the principal Navy RDT&E Center for surface ship combat systems, ordnance, mines, and strategic systems support. The Center employs over 5,000 civilians at research offices and test facilities at five locations: Dahlgren, Virginia; Silver Spring, Maryland; Ft. Monroe and Wallops Island, Virginia; and Ft. Lauderdale, Florida.

The Computing Systems and Networks Division is located in Dahlgren, Virginia. The Dahlgren site is situated on 4,300 acres along the Potomac River, 50 miles south of Washington, D.C. This rural setting is located near historic Fredericksburg, a fast-growing city centered between Washington, D.C. and Richmond, Virginia.

The Computing Systems and Networks Division is one of five Divisions in the Engineering and Information Systems Department. The Department provides leadership and guidance for tasks in the following areas:

- Design and Manufacturing—design, documentation, and manufacturing support for mechanical and electronic devices;
- Technical Information—services in writing, editing, graphics, photographics, audiovisual, and a technical library;
- Product Assurance—reliability, maintainability, configuration management, data management, specifications, human factors engineering, and integrated logistics support;
- **Computing Systems and Networks**—development, operation, and maintenance of cost-effective computing, telecommunications, and information systems to meet NAVSWC's scientific, management, and business needs;
- Systems—leadership, products, and services for business information systems and their associated networks.

The Computing Systems and Networks Division supports programs in technical and non-technical organizations throughout the Center. We employ about 100 people with a variety of backgrounds including administrative personnel; computer scientists and specialists; mechanical, electrical, electronic, and industrial engineers; physicists; mathematicians; statisticians; electronic technicians; program analysts; computer operators; and computer assistants. These skilled employees emphasize quality service, quick responsiveness, and operational efficiency in meeting NAVSWC and Navy needs.

Our Division works towards the following objectives: (1) to provide and maintain Center-wide networking and high performance computer access to all Center employees, (2) to perform research and development in networking technology, and (3) to evaluate computer technology and implement new computational tools and capabilities.

RAYMOND O. BRANCOLINI,
Head, Computing Systems
and Networks Division

Introduction

The mission of the Computing Systems and Networks Division is to provide Center-wide computing and network systems to economically and effectively meet Center needs. We strive to accomplish this mission by managing, operating, and improving the Center's high performance scientific and engineering computing facilities. We evaluate, select, procure, install, operate, and maintain Center-wide scientific and engineering computer and network systems. We perform research and development on computing systems, computational tools, and network technologies, and we are well known in the scientific community for our mathematical computer libraries. We play an active role in the Center's software engineering environment.

The Division is comprised of three Branches—Networks, Scientific Computing Systems, and Engineering and Analysis. Although each Branch is responsible for individually distinct products and services that will be highlighted on the following pages, these groups work together as an interdisciplinary team to effectively accomplish the objectives of the Division's challenging job assignments.

Our computing and networking facilities and resources service the entire Center with high performance computational capability and provide network connectivity to the majority of the Center's population. These networks provide connectivity not only to the Computing Systems and Networks Division's central computer facility but to other project specific systems at the Center. The Division also provides worldwide connectivity through the Defense Data Network (DDN) MILNET. Division personnel operate all levels of computer processing from unclassified to top secret, and they operate networks classified to the secret level.

Networks Branch

The Networks Branch is responsible for:

- satisfying the telecommunication needs of the Center;
- performing advanced technology evaluations of communication components, systems, and methodologies;
- performing engineering design, development, test, and deployment of systems to accommodate Center requirements; and
- determining and providing operational and maintenance support of current data communication networks throughout the Center.

Electronic transfer or sharing of information is a vital part of Center programs. The mechanical, electrical and electronic engineers, and electronic technicians in the Networks Branch ensure that these network services are available. Currently, there are three Center networks: unclassified terminal-to-computer network (CWAN); unclassified computer-to-computer network (NSWC-NET); and classified terminal-to-computer network [secure data network (SDN)]. The networking facilities consist of over 25 miles of trunk, distribution, and drop cables; over 1,500 interconnection components such as power amplifiers, modems, linking devices, bridges, routers, and transceivers; and a network management system which controls traffic flow and analysis, component parameter settings, and system routing configurations. These facilities support thousands of CWAN, NSWC-NET, and SDN users.

The two principal Center initiatives supported by the Networks Branch are the Scientific & Engineering High Performance Computing Program and the NAVSWC Information, Command, and Control System Program. Intensive engineering efforts to modernize the networking facilities to meet the Center's communications needs in the 1990's continue each day. These efforts include:

- upgrading existing facilities to expand classified terminal-to-computer (9600 baud) access;
- establishing a Center classified computer-to-computer (10 megabit/sec and 100 megabit/sec) network;

- upgrading the unclassified computer-to-computer network from 10 megabit/sec to 100 megabit/sec; and

- transitioning from the DOD Standard Transmission Control Protocol/Internet Protocol (TCP/IP) to the Government Open Systems Interconnection Profile (GOSIP).

Some of the driving forces behind these modernizations are the acquisition of a high performance Follow-on Scientific & Engineering Computing System (FOSECS), the use of advanced processing techniques (such as graphic visualization) for complex problem solving, the transition to GOSIP, and the continued construction of new buildings at the Center.

A new area of study and investigation in the Branch is video and voice technologies. Some current and planned services include video teleconferencing, image processing, animation, video broadcasting, voice annotation of reports and graphics, speech recognition and generation, and voice messaging.

Scientific Computing Systems Branch

The Scientific Computing Systems Branch is responsible for all facets of the Center's multi-million dollar central computing facility. Currently, the Branch maintains four Control Data Corporation mainframes that service over 2,000 employees and contractors located both on and off site. These 170 and 180 series mainframes run the NOS and NOS/VE systems. Mass storage of 70 gigabytes on each system is available for user storage. The largest machine has 192 megabytes of virtual memory and a 64-bit word length. The unclassified systems are available via the CWAN and the secret system via the SDN. This computer inventory will soon be increased to include multiple mainframe CRAY super computers.

The Branch is comprised of five groups that each have different responsibilities but work together as a team to ensure systems' availability and responsiveness.

An Operations Group of computer operators is responsible for the physical operation of the computer systems. Some of their efforts include scheduling special jobs, monitoring systems, mounting tapes and disk packs, arranging for maintenance, maintaining tape and disk libraries, distributing output, creating special output, conducting equipment inventories, backing up system files, responding to "crashes," and restarting systems.

The Systems Group of computer scientists and mathematicians handle the operating systems' software problems. They respond to system "crashes" 24-hours a day, trouble shoot to determine the causes of system failures, and restore the systems for customers. They also install, test, and evaluate operating system modifications and updates as required. They evaluate and test system modifications and updates before they are installed on the on-line systems, and are responsible for maintaining current, up to date systems.

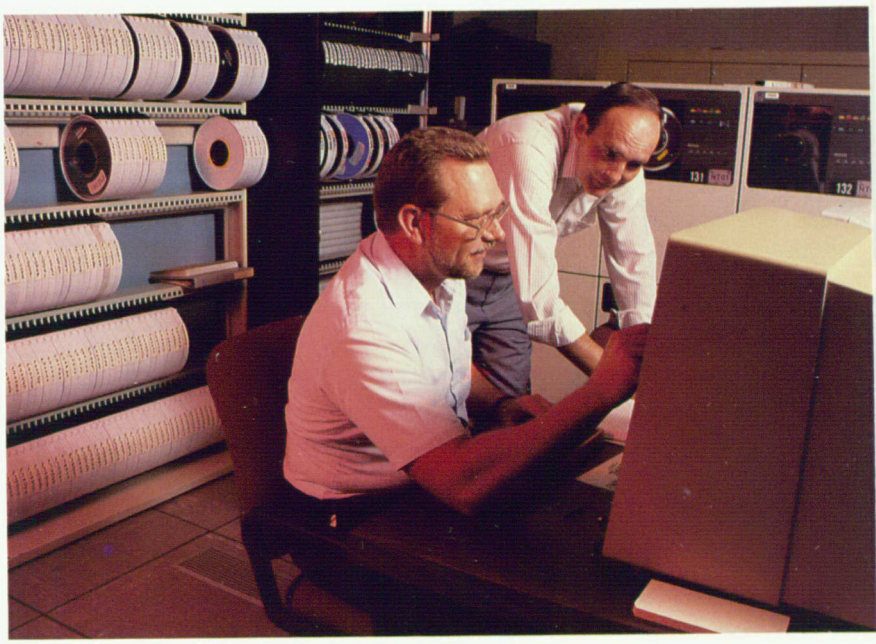
A User Services Group is staffed primarily by mathematicians and computer scientists who assist users with software application and job control problems. They teach computer classes at the Center and, when necessary, schedule specialized classes and seminars. They maintain, review, and distribute all computer-related literature necessary for the effective use of a computer.

The User Services Group also works with the Systems Group to ensure that user issues are taken into consideration before system changes are proposed. These professionals receive and resolve user

hardware and software trouble reports. They receive requests from users for new software and are responsible for procuring, installing, testing and evaluating, and new software.

A Facilities Management Group of electronic technicians is a technical team that addresses both long-range facility planning and daily operational concerns such as electrical power, air conditioning, and security for the Division. They maintain an internal Computer Aided Design Facility to assist configuration planners and to produce architectural drawings and associated documentation.

An Advanced Projects Group of physicists, computer scientists, and computer technicians maintains an expertise in computer technology advances and evaluates and recommends these advances for inclusion in the Center's operational system. This group is also responsible for establishing and maintaining ADP security procedures and practices to ensure that the Center follows Navy security requirements for processing classified information. Major areas of expertise include large-scale optical storage, super-computer technology, passive and real-time graphics, high-speed color printing, large-scale mass storage techniques, expert systems, and artificial intelligence.

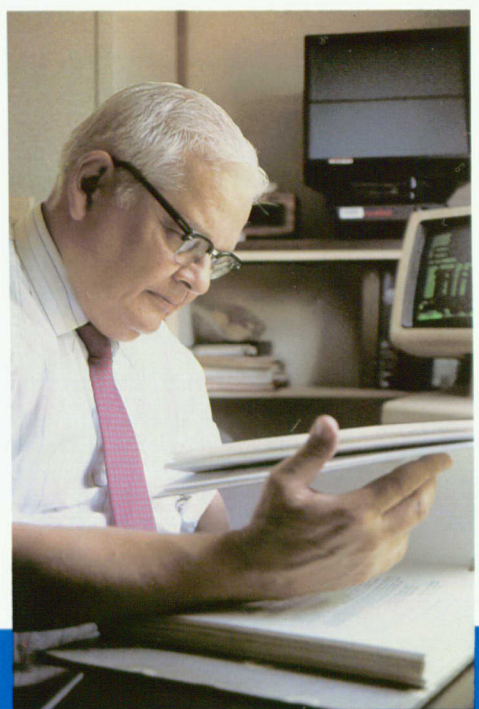


Engineering and Analysis Branch

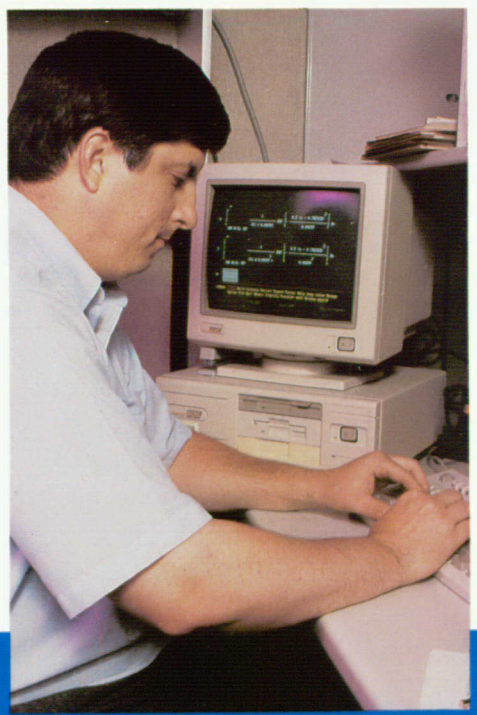
The Engineering and Analysis Branch is responsible for conducting research, development, and business operations associated with the Service Cost Center product lines of the Computing Systems and Networks Division. Some of the many Cost Center services include access to Center-wide high performance computers, communication networks, and office automation systems. In addition, the Branch provides technical support and consulting services in the areas of statistics/probability, mathematics, and data visualization. The Branch is comprised of the three groups described below.

The primary function of the Mathematics and Statistics Group of mathematicians, statisticians, and computer scientists is to research mathematical/statistical algorithms and techniques to be used by scientists and engineers for high performance and desktop computing. The group develops and maintains libraries of mathematical subroutines and statistical programs which are used throughout the free world. Support and consultation are provided to Center programs in the application of mathematical/statistical tools including the development of customized software.

The responsibilities of the ADP Systems Business Office are to support the Service Cost Center business operations and to coordinate their customer services. Major functions performed by the program analysts and computer assistants include the management of customers' accounts, financial management, and acquisition support administration. The staff coordinates, develops, and maintains the necessary software tools and databases to fulfill these functions.



The primary responsibility of the ADP Systems Engineering and Applications Group of engineers, physicists, and computer scientists is to conduct research and develop scientific data visualization techniques to be used by scientists and engineers in both high performance and desktop computing. The group develops, acquires, evaluates, implements, and maintains data visualization software packages for use with various high performance graphics workstations. They also provide support and consultation to Center programs in the area of data visualization. Efforts are directed toward the total integration of desktop computing systems with the Center's high performance computers, using the Center's data communication networks.



Benefits

Self Development—Employees are encouraged to attend appropriate and job-related seminars, conferences, or trade shows. This not only helps the individual to keep up with the state-of-the-art but allows Center employees to keep others informed of the Center's latest developments.

Many of the Computing Systems and Network Division personnel have earned advanced degrees while employed at the Center. The Center has an aggressive educational program and maintains a close working relationship with local universities such as the University of Virginia, Virginia Polytechnic Institute and State University, and the University of Maryland. These facilities offer advanced degree curricula at the Center, and most courses are given during working hours. Center personnel also take advantage of the close proximity of several community colleges as well as Georgetown, George Washington, and Catholic Universities in Washington, D.C., and Mary Washington College in Fredericksburg, Virginia, for evening courses.

The two most popular educational programs at the Center are the Full-Time Advanced Study Program, in which selected Center employees are sponsored to attend the school of their choice to pursue graduate studies with full pay; and the Work Study Program, where 20 hours a week may be used for academic studies for 1 year with a possibility of renewal for the second year.

Some of the educational programs are the work-study program, long-term training program, part-time academic study program, and the graduate research program.

Currently, the Center offers a program under which new professional employees are rotated through a series of four three-month assignments to different organizations in the Center before returning to their parent organization. Each assignment involves unique educational tasks in a different group. This not only provides the employee with knowledge about other Center programs but also demonstrates how his/her job fits into the overall picture.

In addition to training-related travel, personnel also visit other government agencies, universities, and private industry for job-related functions. Travel varies with each project.

Office Environment—A majority of the Center's technical personnel are equipped with personal computers. These PCs may operate on-line as terminals to communicate interactively with a wide variety of Center computer systems using different networks, or they may be used alone with a large variety of software programs.

A centralized office automation system is available offering such features as electronic mail, word processing, calendar scheduling, and access to the Defense Data Network. It not only allows personnel to communicate with others at the Center but also private industry, university, and Department of Defense offices world-wide. Access to unclassified processors is available via phone for use when on travel.

The Center's technical library with state-of-the-art cataloging and retrieval systems allows personnel to keep abreast of current technical publications. The Technical Publications Branch provides writing, editing, word processing, graphics, and photographics services to assist scientists and engineers in documenting their work. Machine shops and electronic fabrication facilities are available for small scale production and prototyping.

Another benefit of a career at the Center is the opportunity to get funding for research and development projects that are of specific interest to the individual. The Center's Independent Exploratory Development (IED) Program encourages engineers and scientists to propose to a technical panel research or exploratory development projects. Projects funded by this Program are selected based on merit, and reviewed every 12 months for possible extension. The Center is recognized as having the finest IED Program among the Navy Research and Development Centers.

The physical work environment is comfortable, with climate controlled rooms and sufficient office space.

Eating facilities are within easy access, located both on Center grounds and within easy driving distance.

Because of Dahlgren's rural location, there are no traffic tieups during rush hours, and there is ample free parking close to the offices.

The Dahlgren site is located in close proximity to four major airports: Baltimore-Washington International, Dulles, Richmond/Byrd Field, and Washington National.

The Dahlgren Area—The Dahlgren site is in King George County, Virginia, located on the shores of the Potomac River. Nearby Fredericksburg, where many employees make their home, is a fast-growing, historic city where one of the earliest English settlements thrived.

The Dahlgren area provides an excellent atmosphere for any lifestyle. The best of the country life can be found in this area, but the city life is close at hand. Dahlgren is within a comfortable drive from the lights and action of Washington, D.C.; Richmond, Virginia; and Baltimore, Maryland.

A few cultural, educational, and entertaining attractions within driving distance from Dahlgren are The Old Country Busch Gardens; Kings Dominion; Colonial Williamsburg; Luray Caverns, one of the largest caves in the eastern United States; Virginia Beach; and the Mount Vernon Mansion, home of George and Martha Washington.

Sports enthusiasts will enjoy hunting, fishing, crabbing, and a wide variety of water sports right on the Potomac in Dahlgren. Organized sports such as softball, soccer, karate, judo, basketball, and swimming also are available at the Center or in nearby communities. The Center has a swimming pool, tennis courts, a golf course, a gymnasium, and several sports fields.

For information about a future with the Computing Systems and Networks Division, please mail a completed SF-171 to the address below, or call the Computing Systems and Networks Division Office at (703) 663-8056. Please specify on your SF-171 or during the phone call the office for which you desire to work.

Naval Surface Warfare Center
Attn: P60
Dahlgren, VA 22448-5000

For additional information about services, costs, and computer/network access, please call the Computing Systems and Networks Division Office at (703) 663-8056 or mail your request to the following address.

Naval Surface Warfare Center
Attn: E40
Dahlgren, VA 22448-5000

Naval Surface Warfare Center
Dahlgren, VA 22448-5000

10901 New Hampshire Avenue
Silver Spring, MD 20903-5000